

Abstract

The amount and area of irradiation of excited species to the surface of a workpiece can be increased, the irradiation can be uniformly performed on the whole surface, and the loss of effective excited species is suppressed, so that the treating performance and efficiency can be remarkably improved. A pulse voltage is applied between discharge electrodes (4) which are opposingly positioned, to produce a corona discharge between pointed ends of the discharge electrodes, and the surface of a workpiece is irradiated with excited species including plasma produced by the corona discharge, thereby treating the surface. Plural discharging units are prepared in each of which a first electrode (11) and a second electrode (12) are opposingly placed. One of the secondary terminals of a transformer (15) is connected to each of the first electrodes (11) of plural discharging units (13). The other secondary terminal of the transformer (15) is connected to the second electrodes (12) of the plural discharging units (13) via rectifiers. The corona discharge is generated alternately in the plural discharging units (13).